Sandy Ridge – a master-planned precinct with regional residue management enabling future material circularity

Steve Hosking1, Nate Smith2, Nathan Blight3and Martin Gravett4

1. Chief Operating Officer, Tellus, Perth WA 6000. [steve.hosking@tellus.com.au](mailto:steve.hosking@tellus.com.au)

2. Managing Director and Chief Executive Officer, Tellus, Sydney NSW 2000. [nate@tellus.com.au](mailto:nate@tellus.com.au)

3. GM Studies, CPEng, Tellus, Perth WA 6000. [nathan.blight@tellus.com.au](mailto:nathan.blight@tellus.com.au)

4. Senior Technical Director, Resource Recovery and Waste Management, CPEng, RPEQ (Civil, Environmental), GHD, Perth, WA, 6000. [martin.gravett@ghd.com](mailto:martin.gravett@ghd.com)

# ABSTRACT

The Sandy Ridge Facility is Australia’s only commercial geological repository licensed to permanently isolate hazardous and intractable waste, including radioactive material, from all states and territories in Australia and its Exclusive Economic Zone. Approved by all levels of government, Sandy Ridge has been operating for five years.

Sandy Ridge forms part of a master-planned precinct that will include ‘MinStore’ – a regional residue storage concept connected by rail, comprising dry-stack monocells for minerals processing residues. MinStore enables outsourcing of tailings/residue management and distributes costs across multiple industry participants, with R&D trial facilities for material reuse investigation and blending of compatible materials. Current R&D is evaluating use of a mineral processing residue to enhance sealing of an intractable waste cell at closure.

The facility lies within a geologically stable landform that has been in place for about 250 million years, and the combination of a virtually flat plateau, cemented surface layers, dry geology and semi-arid conditions create a stable geomorphology.

The facility’s robust safety case, and unique insurance and “assurance” framework enabled Sandy Ridge’s social licence and launch. Tellus negotiated a unique trust structure ensuring that when the Facility ceases operations, there will be sufficient funds for the closure and 100-year monitoring period led by the WA Government. Tellus issues a “Tellus Permanent Isolation CertificateTM” that enables clients to permanently remove disposal liability from their balance sheets under Australian Accounting Standards. Tellus’ assurance structure ensures that liability cannot revert to waste generators, or Australian taxpayers while creating tangible value to generators by certifying a reduction in corresponding balance sheet liability.

This centralised materials management hub provides a unique opportunity for progressing towards more sustainable practices and material circularity built around leveraging the positive attributes of residual materials to create useful products with traceability. The rail connectivity enhances transport efficiency and enables backloading of products, unlocking the value of otherwise stranded waste materials.